

Документ подписан простой электронной подписью
Информация о владельце:
ФИО: Порохня Андрей Алексеевич
Должность: И.о. директора института перспективной инженерии
Дата подписания: 22.10.2026 13:25:38
Уникальный программный ключ:
990bea3aecc48c23bd8699e48288f8d1960c600

MINISTRY OF SCIENCE AND HIGHER EDUCATION OF THE RUSSIAN FEDERATION
Federal State Autonomous Educational Institution
Higher Education
"NORTH CAUCASUS FEDERAL UNIVERSITY"

APPROVED BY
Acting Director of the Institute
Advanced Engineering
Cand. Tech. Sci., Associate Professor
A.A. Porokhnya

WORK PROGRAM OF THE DISCIPLINE
"Principles of Communications"

Field of study	11.03.02 Infocommunication Technologies and Communication Systems
Profile	Intelligent Data Processing in Infocommunication Systems and Networks
Year of start of training	2026
Form of study	Full-time
Implemented in a semester	6

Developed by
Professor at the School of Digital Sciences,
Robotics and Electronics
Institute of Advanced Engineering
Cand. Tech. Sci., Professor
Bazhenov A.V.

1. Purpose and objectives of mastering the discipline (module)

The purpose of mastering the discipline is to form students' professional competencies aimed at the development, design and application of structured cable systems of telecommunication networks.

Objectives of mastering the discipline:

- 1) Systematization of fundamental knowledge on the theory of electrical circuits and long lines, as well as methods for measuring their parameters.
- 2) Formation of a system of knowledge, skills and abilities to carry out all types of calculations of parameters of structured cable systems, including the use of specialized software.
- 3) Formation of ideas on the principles of construction and operation of structured cabling systems, identification and analysis of advantages and disadvantages of design solutions for structured cabling systems.
- 4) Acquisition of primary skills in the technology of installation and configuration of equipment for structured cabling systems.

2. Place of the discipline (module) in the structure of the educational program

The discipline "Structured Cable Systems" refers to the disciplines of the part formed by the participants of educational relations, Block 1 Discipline (modules).

3. List of planned learning outcomes in the discipline (module) correlated with the planned results of the development of the educational program

Code, formulation of competence	Indicator code, wording	Planned learning outcomes in the discipline (module), characterizing the stages of the formation of competencies, indicators
PC-1. It is capable of developing switching subsystems and network platforms, data transmission networks, transport networks and radio access networks, satellite communication systems	ID-1PK-1 understands and is guided by the principles of construction and operation of communication networks, including their constituent subsystems, and signaling protocols, standards for the quality of data, voice and video transmission used in communication networks, in the legislation of the Russian Federation in the field of communications.	Understands and navigates the principles of construction and operation of structured cabling systems
	ID-2PC-1 analyzes statistical parameters of traffic, develops solutions for operational reconfiguration of the network, changing the parameters of the switching subsystem, network platforms, for the use of equipment of new technologies; changing and adjusting the parameters of the switching subsystem, transport networks and data transmission networks, for organizing new and expanding existing communication directions.	Develops solutions for the prompt reconfiguration of structured cabling systems (SCS), parameters of the switching subsystem, transport networks and data transmission networks, for the organization of new and expansion of existing information and communication networks based on SCS technology

Code, formulation of competence	Indicator code, wording	Planned learning outcomes in the discipline (module), characterizing the stages of the formation of competencies, indicators
	ID-4PC-1 develops schemes for the organization of communication and integration of new network elements, builds and expands the switching subsystem and network platforms; performs work on switching equipment, deploys equipment for service platforms, equipment for new technologies on the network, fulfills plans for the expansion of existing equipment of network platforms and new technologies.	Designs structured cabling systems with the ability to implement plans to expand existing equipment, network platforms and new technologies.
PC-3. Able to carry out calculations on the design of networks, structures and means of info-communications in accordance with the terms of reference using both standard methods, techniques and design automation tools, and independently created original programs	ID-1PK-3 understands regulatory, regulatory, technical, organizational and methodological documents that regulate the design preparation, implementation and operation of communication systems (telecommunication systems), the construction of facilities and communication lines.	Understands and applies in practice international and national standards, regulatory documentation for the design of structured cabling systems
	ID-3PK-3 calculates the parameters and characteristics of the network and infocommunication facilities, analyzes their qualitative indicators based on statistics and radio measurements, and uses specialized design software.	Calculates the parameters of structured cabling systems, including the use of specialized software.
	ID-4PK-3 identifies and analyzes the advantages and disadvantages of design solutions, assesses the risks associated with the implementation of the project.	Identifies and analyzes the advantages and disadvantages of structured cabling design options
	ID-5PK-3 collects initial data for the design of the network and infocommunication facilities, determination of the optimal configuration and topology of the transport network; develops technical solutions for the implementation of the communication system (telecommunication system) and its components.	Collects initial data for the design of structured cabling systems and their components.
PC-5. Ability to carry out installation, configuration, adjustment, testing of equipment, development of	ID-1PK-5 understands the current industry standards that determine the requirements for the parameters of the operation of equipment, channels and paths; methods for checking the	Understands and complies with standards, technical regulations and industry regulations that define the requirements for the design of structured cabling systems

Code, formulation of competence	Indicator code, wording	Planned learning outcomes in the discipline (module), characterizing the stages of the formation of competencies, indicators
operating modes, control of design parameters of operation and testing of communication equipment, ensuring compliance of technical parameters of information and communication systems and/or their components with established operational and technical standards	technical condition of equipment, paths and transmission channels.	
	ID-2PK-5 complies with the technologies for setting up, adjusting and testing communication (telecommunications) equipment, operating rules and methods of using measuring and testing equipment.	Complies with the technologies for the installation and configuration of structured cabling equipment
	ID-5PC-5 selects and uses the appropriate test and measurement equipment, uses the equipment software when setting it up.	Selects and uses test and measurement equipment for the installation and configuration of structured cabling systems
PC-8. Capable of performing routine maintenance on network devices and software of the information and communication system	ID-1PK-8 complies with the instructions for the installation and operation of the administered network devices and software; the regulations for preventive maintenance on the administered information and communication system.	Complies with the instructions for installation, operation and maintenance of the information and communication system, as well as the regulations for preventive maintenance
	ID-2PC-8 installs operating systems of network devices; monitors administered network devices; uses standard data recovery procedures, works with archiving servers and operating system management tools; draws up a backup schedule for the operating systems of network devices; disassembles and assembles administered network devices.	Carries out the installation and basic configuration of network equipment, monitors the condition of the cable system, applies standard procedures for diagnostics and restoration of performance, participates in the assembly and disassembly of elements
	ID-3PC-8 uses modern means of monitoring the performance of the administered network; it uses regulatory and technical documentation in the field of information and communication technologies to solve problems.	Uses modern means of testing and controlling the parameters of structured cabling systems, applies regulatory and technical documentation and standards in design and operation
	ID-4PC-8 performs work on rebooting the operating systems of network devices, planning the schedule for copying the software of the network infocommunication system, restoring parameters using archiving servers and management tools of specialized	Performs work to restore the operability of information and communication systems, participates in the planning of routine maintenance, including backup and restoration of

Code, formulation of competence	Indicator code, wording	Planned learning outcomes in the discipline (module), characterizing the stages of the formation of competencies, indicators
	operating systems of network equipment.	network infrastructure configurations
	ID-5PK-8 carries out routine maintenance of equipment in accordance with the manufacturer's recommendations.	Carries out routine and preventive maintenance of information and communication systems in accordance with the technical requirements and recommendations of equipment manufacturers.

4. Scope of the academic discipline (module) and forms of control

Scope of classes: total: 3 EC 108 academic hours.	OFO, In acad. hours
Contact work:	46.00/0
Lectures/from them practical training	0
Laboratory work/from them practical training	0
Practical training/of which practical training	46.00/0
Independent work	62.00
Forms of control	
Exam	-
Credit	Yes
Credit with a grade	-
Course work	no

5. The content of the discipline (module), structured by topics (sections) with an indication of the number of hours and types of classes

№	Section (topic) of the discipline and summary	Emerging competencies, indicators	Full-time				Current Forms control Academic Performance
			Contact work of students with the teacher / of them in the form of practical training, hours			Independent work, hours	
			Lectures	Practical exercises	Laboratory work		
Semester 6							
1	Introduction to structured cabling systems. Structured cabling system as a part of an infocommunication network.	PC-1 ID-1PK-1 ID-2PK-1 ID-4PK-1		6		8	Interview

	Main types of SCS communication lines. Structured cabling system of a building. Fundamentals of electrodynamics of communication lines. Basic Provisions of Electrodynamics of Guiding Systems. Characteristics of the Electromagnetic Field. Electromagnetic Processes in Conductors and Dielectrics. Surface Effect. Guided Electromagnetic Waves. Initial Principles of Calculation of Guiding Systems. Study of the nature of signal propagation in long communication lines Practical Work No1 Investigation of the nature of signal propagation in long communication lines	PC-3 ID-1PK-3 ID-3PK-3 ID-4PK-3 ID-5PK-3 PP-8 ID-1PC-5 ID-2PK-5 ID-3PK-5 ID-4PK-5 ID-5PK-5					
2	Electrical communication lines. Classification of electrical communication cables. Structural elements of symmetrical communication cables. Marking of symmetrical communication cables. Structural elements of coaxial communication cables. Marking and types of coaxial communication cables. Electrical cables for digital subscriber lines. The problem of electromagnetic compatibility in communication lines. Basic definitions and methods for studying mutual influences. Influences in homogeneous symmetrical communication lines. Influence between circuits of symmetrical cable communication lines. Effects in the construction lengths of the cable. Methods for increasing noise immunity Investigation of structural elements of symmetrical communication cables Coaxial Link Study Calculation of Parameters of Electromagnetic Waves in a Coaxial Cable Practical Work No2 Investigation of structural elements of symmetrical communication cables	PC-1 ID-1PK-1 ID-2PK-1 ID-4PK-1 PC-3 ID-1PK-3 ID-3PK-3 ID-4PK-3 ID-5PK-3 PP-8 ID-1PC-5 ID-2PK-5 ID-3PK-5 ID-4PK-5 ID-5PK-5		6		8	Interview
3	Optical communication lines. Physical Foundations of Signal Transmission via Optical Cables. Fiber Fiber.	PC-1 ID-1PK-1 ID-2PK-1		6		8	Interview

	Single-Mode and Multimode Fibers. Radial Analysis of Radiation Propagation in an Optical Fiber. Wave Analysis of Radiation Propagation in an Optical Fiber. Characteristics of Optical Lines and Their Measurement. Causes of Signal Attenuation in an Optical Cable. Dispersion. Main Dependencies of Optical Fiber Characteristics. Devices and Methods for Measuring FOCL Parameters. Study of a fiber-optic communication line Practical Work No3 Coaxial Link Study	ID-4PK-1 PC-3 ID-1PK-3 ID-3PK-3 ID-4PK-3 ID-5PK-3 PP-8 ID-1PC-5 ID-2PK-5 ID-3PK-5 ID-4PK-5 ID-5PK-5					
4	Components of FOCL. Fiber-optic components of a structured cabling system. Component composition of the fiber-optic part of a structured cabling system. Fiber-optic cables of external laying. Intra-facility cables. Optical fiber connectors. Integral connectors (splices). Connectors (connectors and adapters). Fiber-optic distribution devices. Technologies for terminating fiber optics with connectors Practical Work No4 Calculation of electromagnetic parameters waves in a coaxial cable	PC-1 ID-1PK-1 ID-2PK-1 ID-4PK-1 PC-3 ID-1PK-3 ID-3PK-3 ID-4PK-3 ID-5PK-3 PP-8 ID-1PC-5 ID-2PK-5 ID-3PK-5 ID-4PK-5 ID-5PK-5		6		8	Interview
5	Design of structured cabling systems. Hierarchy in a cabling system. Selection of a cable type for horizontal subsystems. Selection of a cable type for vertical subsystems. Standards for SCS implementation. Components of structured cabling systems. SCS switching equipment. Switching and hardware cables. Horizontal subsystem. SCS computer-aided design systems. NanoCAD platform. CAD nanoCAD SCS. Documentation of design results. Research of SCS design technology on the nano CAD platform SCS design in the nanoCAD SCS environment Practical Work No5 Study of fiber-optic Communication Lines	PC-1 ID-1PK-1 ID-2PK-1 ID-4PK-1 PC-3 ID-1PK-3 ID-3PK-3 ID-4PK-3 ID-5PK-3 PP-8 ID-1PC-5 ID-2PK-5 ID-3PK-5 ID-4PK-5 ID-5PK-5		6		10	Interview
6	Improving the reliability and performance of SCS. Improving SCS	PC-1 ID-1PK-1		8		10	Interview

	reliability. Redundancy of transport lines. Increasing SCS reliability due to active elements. Increasing SCS performance. Aggregation of SCS lines. Splitting the horizontal subsystem of SCS into several virtual networks. Study of the technology for adjusting the active elements of SCS Practical Work No6 Study of SCS design technology on the nanoCAD platform	ID-2PK-1 ID-4PK-1 PC-3 ID-1PK-3 ID-3PK-3 ID-4PK-3 ID-5PK-3 PP-8 ID-1PC-5 ID-2PK-5 ID-3PK-5 ID-4PK-5 ID-5PK-5					
7	Installation and operation of SCS. Cable laying. Cabling inside the building. Laying cables between buildings. Electrical grounding of SCS elements. Operation of structured cabling systems. Ensuring safety during installation works. Commissioning of SCS. Periodic maintenance and modernization of SCS Practical Work No7 SCS design in the nanoCAD SCS environment	PC-1 ID-1PK-1 ID-2PK-1 ID-4PK-1 PC-3 ID-1PK-3 ID-3PK-3 ID-4PK-3 ID-5PK-3 PP-8 ID-1PC-5 ID-2PK-5 ID-3PK-5 ID-4PK-5 ID-5PK-5		8		10	Interview
	TOTAL for the semester			46.00		62.00	
	TOTAL			46.00		62.00	

6. Fund of assessment tools for current monitoring of progress and intermediate certification of students in the discipline (module)

The Assessment Tools Fund (ASF) for the current monitoring of progress and intermediate certification of students in the discipline (module) "Principles of Communications" is based on the list of competencies to be mastered with an indication of the stages of their formation in the process of mastering the discipline (module).

- description of indicators and criteria for assessing competencies at various stages of their formation, description of assessment scales;
- methodological materials that determine the procedures for assessing knowledge, skills, and (or) experience of activity, characterizing the stages of competence formation;
- standard control tasks and other materials necessary to assess knowledge, skills and the level of mastery of the formed competencies in the process of mastering the discipline (module).

The FAT is an appendix to this program of the discipline (module).

7. Methodical instructions for students on the development of the discipline

Starting work, each student should take into account the following provisions.

The discipline (module) is built on a thematic principle, each topic is a logically complete section.

The lecture material is devoted to the consideration of the key, basic provisions of the curriculum and the explanation of educational tasks submitted for independent work of students.

Practical work is carried out in order to consolidate the acquired information, work out technological techniques, acquire skills for its application in solving practical problems in the design and operation of structured cabling systems.

Independent work of students is aimed at independent study of additional material, preparation for laboratory work, as well as performing all types of independent work.

For the successful development of the discipline, it is necessary to perform all types of independent work, using the recommended sources of information.

8. Educational, methodological and information support of the discipline

8.1. List of basic and additional literature necessary for mastering the discipline (module)

8.1.1. List of basic literature:

Semenov, A. B.
 Structured Cable Systems / A. B. Semenov, S. K. Strizhakov, I. R. Suncheley. - Structured Cable Systems, 2024-09-24. - Electron. dan. (1 file). - Saratov : Professional Education, 2019. - 640 p. - Electronic. - The book is in the premium version of EBS IPR BOOKS. - ISBN 978-5-4488-0092-4, unlimited copies

Guiding Telecommunication Systems: A Textbook / V.A. Andreev, E.L. Portnov, L.N. Kochanovsky, Vol.1, Theory of Transmission and Influence. - [7th ed., revised and supplemented]. - Moscow: Hot Line - Telecom, 2011. - 424 p.: ill. - Vulture: Rek. GOU HPO MTUCI. - Refs.: p. 412-416. - ISBN 978-5-9912-0092-9, 15 copies.

8.1.2. List of additional literature:

Sklyarov O.K. Volokno-opticheskie seti i sistemy svyazi [Fiber-optical networks and communication systems]. Electron. Tekstovye dannye. Moscow, SOLON-PRESS Publ., 2009. — 266 c. — 5-98003-147-2. — Access mode: <http://www.iprbookshop.ru/8660.html>, unlimited copies.

Semenov A.B., Portnov E.L., Zubilevich A.L. Structured Cable Systems: Textbook. Electron. Text Data. Moscow: Moscow Technical University of Communications and Informatics, 2010. — 103 c. — 2227-8397. — Access mode: <http://www.iprbookshop.ru/63363.html>, unlimited copies.

Semenov A.B. Proektirovanie i raschet strukturatsionnykh kabelnykh sistem i ikh komponentov [Design and calculation of structured cable systems and their components] / A.B. Semenov. – Electron. Tekstovye dannye. – Saratov: Profobrazovaniye, 2008. — 416 c. — 978-5-4488-0120-4. – Mode of access: <http://www.iprbookshop.ru/63954.html> - 7 copies.

8.2. List of educational and methodological support for students' independent work in the discipline (module)

Methodical recommendations for laboratory work on the discipline "Structured Cable Systems": Direction of training 11.03.02 "Infocommunication Technologies and Communication Systems". Qualification of a graduate – Bachelor / Compilation. AyuV. Bazhenov. – Electronic resource. – Stavropol: NCFU, 2022. Unlimited copies.

Guidelines for Independent Work in the Discipline "Structured Cable Systems": Direction of training 11.03.02 "Infocommunication Technologies and Communication Systems". Qualification of a graduate – Bachelor / Compilation. A.V. Bazhenov. – Electronic resource. – Stavropol: NCFU, 2019, unlimited copies.

8.3. List of resources of the information and telecommunication network "Internet" necessary for mastering the discipline (module)

- 1 Official website of the Federal Agency for Technical Regulation and Metrology ROSSTANDART. – Available at: <http://www.gost.ru/wps/portal/>
- 2 Website of the Federal State Autonomous Educational Institution of Additional Professional Education "Academy of Standardization, Metrology and Certification (Educational)". – Mode of access: <http://www.asms.ru/>
- 3 Federal Information Fund for Ensuring the Uniformity of Measurements. – Available at: <http://www.fundmetrology.ru/default.aspx>

9. List of information technologies used in the implementation of the educational process in the discipline (module), including a list of software and information reference systems

When reading lectures, computer equipment is used, demonstrations of presentation multimedia materials. At seminars and practical classes, students present presentations prepared by them during the hours of independent work.

Information reference systems:

Information and reference and information and legal systems used in the study of the discipline:

1	http://www.krugosvet.ru/enc/nauka_i_tekhnika/transport_i_svyaz/VOLOKONNAYA_OPTIKA.html
2	http://www.laserportal.ru/content_301

Software:

1	Viola Workstation 10
2	Alt Workstation K
3	Viola "Server"
4	Office software package - P7-Office
5	PTC Mathcad
6	nanoCAD board company with nanoCAD SCS module

10. Description of the material and technical base necessary for the implementation of the educational process in the discipline (module)

Lectures	Classroom for training sessions, equipped with multimedia equipment and technical teaching aids.
Laboratory Classes	Classroom equipped with equipment and technical means of training: - portable laptop, interactive whiteboard, projector BenQ PB 8263; - a standard set of studies. equipment "Wireless Computer Networks; - a standard set of studies. Equipment "Global computer networks WAN-3" Uchtech-Profi; - a standard set of training. equipment "Wireless computer networks of computers"; -servers #1 – 4 pcs., #2 – 1 pc., #3 – 1 pc., #4 – 1 pc. - server redundancy kit - 1 pc., FG-TDMoIP - SR-4E1 interface converter - 2 pcs., console with server equipment switch - 1 pc., Zyxel IES -1000 ADSL2+ hub complete with modems - 1 pc.; - Cisco 2811-CCME/2811 routers – 1 pc., Cisco 2811(2FE) – 1 pc., SHDSL ZyXEL Prestige 791 ReE – 4 pcs., Zyxel P-792H EE – 2 pcs.; - FG-PAM- SRL-4 Eth-R. NG modems – 11 pcs., FG-PAM-4SAN- Eth-R. NG – 19 pcs., FG-PAM-S-4Eth. NG – 8 pcs., FG-PAM-SRL-4Eth. NG – 4 pcs., G SHDSL Zixel Prestige 782 m EE – 1 pc., Telindus 1421 – 2 pcs., ZyX 2602R-EE – 2 pcs., FG-PAM-SAN-4E-NG – 3 pcs.; - Zyxel IES-1000 (SAM100b) modules – 1 pc., FlexDSL(FG-PAM-SAN-4Eth-R) – 3 pcs., WS-G5486 – 2 pcs., WS-X3500-XL – 2 pcs., Zyxel SAM-1008 – 2 pcs., Zixel SAM-10 modem 8x.shdsl interface module – 3 pcs.; -8 workstations included: System unit (Corei3-8100 (3.6GHz) / 8 GB DDR4 / 240 GB SSD / IntelUHD 630 / ICL RAY B101 / AOC M2470SWD2 23.6". -4 workstations consisting of: system. Asus Intel(R) Celeron(R) unit / CPU G540/2048 / keyboard / mouse, Samsung monitor S19C200N. Connection to the Internet, access to the corporate network of the university.
Independent work	Room for independent work of students, equipped with computer equipment with the ability to connect to the Internet and the ability to access the electronic information and educational environment of the university

Practical training	It is carried out in the structural divisions of the university and (or) in organizations that carry out activities in the profile of the relevant educational program, including its structural subdivision
--------------------	--

11. Features of mastering the discipline (module) by persons with disabilities

Students with disabilities are provided with special textbooks, teaching aids and didactic materials, special technical teaching aids for collective and individual use, the services of an assistant (assistant) who provides students with the necessary technical assistance, as well as the services of sign language interpreters and typhlo-sign interpreters.

The development of a discipline (module) by students with disabilities can be organized together with other students, as well as in separate groups.

The development of a discipline (module) by students with disabilities is carried out taking into account the characteristics of psychophysical development, individual capabilities and health status.

In order to ensure the accessibility of higher education under the educational program by persons with disabilities when mastering the discipline (module), the following is ensured:

- 1) for visually impaired persons:
 - the presence of an assistant who provides the student with the necessary technical assistance, taking into account individual characteristics (helps to take a workplace, move, read and complete the task, including by writing down by dictation),
 - written tasks, as well as instructions on the procedure for their implementation, are drawn up in enlarged font,
 - special textbooks, teaching aids and didactic materials (with large print or audio files),
 - individual uniform lighting of at least 300 lux,
 - if necessary, the student is provided with a magnifying device to complete the task;
- 2) for persons with hearing disabilities:
 - the presence of an assistant who provides the student with the necessary technical assistance, taking into account individual characteristics (helps to take a workplace, move, read and complete the task, including by writing down by dictation),
 - the availability of sound-amplifying equipment for collective use is ensured, if necessary, the student is provided with sound-amplifying equipment for individual use;
 - is provided with appropriate sound means of reproducing information;
- 3) for persons with disabilities with musculoskeletal disorders (including those with severe disorders of the motor functions of the upper extremities or the absence of upper limbs):
 - written tasks are performed on a computer with specialized software or dictated to an assistant;
 - At the request of the student, tasks can be performed orally.

12. Features of the implementation of the discipline using distance educational technologies and e-learning

According to Part 1 of Article 16 of the Federal Law of December 29, 2012 No 273-FZ "On Education in the Russian Federation", *e-learning* is understood as the organization of educational activities with the use of information contained in databases and used in the implementation of educational programs and information technologies, technical means, as well as information and telecommunication networks that ensure the transmission of this information through communication lines, the interaction of students and teachers. Distance *educational technologies* are understood as educational technologies implemented mainly with the use of information and telecommunication networks with indirect (at a distance) interaction between students and teachers.

The discipline can be implemented using distance learning technologies and e-learning in whole or in part. The components of the discipline's teaching materials (the discipline's work program, assessment and methodological materials, forms of certification), implemented using distance learning technologies and e-learning, contain an indication of their use.

When organizing educational activities with the use of distance educational technologies and e-learning, asynchronous and synchronous ways of interacting with participants in educational relations through the information and telecommunication network "Internet" may be provided.

When using distance learning technologies and e-learning, the schedule for the discipline indicates: ways of interaction between participants in educational relations through the information and telecommunication network "Internet" (videoconferencing, ET - electronic testing); links to the electronic information and educational environment of NCFU, to educational platforms and resources of other organizations to which open access is provided through the information and telecommunication network "Internet"; for synchronous learning - the time of online classes and teachers; for asynchronous learning - the authors of online courses.

When organizing interim certification using distance learning technologies and e-learning, the Methodological Recommendations for the Use of Technical Means That Ensure the Objectivity of Results in the Conduct of Interim and State Final Certification in Educational Programs of Higher Education - Bachelor's Degree Programs, Specialist Programs and Master's Degree Programs with the Use of Distance Educational Technologies (Letter of the Ministry of Education and Education of Russia dated 07.12.2020 No MN-19/1573-AN "On the Direction of Methodological Recommendations") are used.

The implementation of the discipline using e-learning and distance learning technologies is carried out using the electronic information and educational environment of NCFU, to which students have access through the information and telecommunication network "Internet", or using the resources of other organizations, including platforms that provide services for video conferences, online meetings and distance learning (MTS-Link), as well as using the capabilities of social networks for communication between students and teachers.